

I Claim:

- sub B2
1. A method for producing basalt fibers, comprising the steps of :
- preheating basalt;
  - charging the preheated basalt into a melting furnace;
  - heating the basalt in said furnace to form a glass mass;
  - stabilizing the glass mass in a stabilizing section of the melting furnace until it reaches a fiber manufacturing temperature;
  - introducing the stabilized glass mass into a feeder;
  - further stabilizing the glass mass in the feeder to obtain a glass mass having the composition

$$\frac{\text{Al}_2\text{O}_3 + \text{SiO}_2}{\text{CaO} + \text{MgO}} \geq 3 \qquad \frac{\text{FeO}}{\text{Fe}_2\text{O}_3} \geq 0.5$$

$$\frac{2\text{Al}_2\text{O}_3 + \text{SiO}_2}{2\text{Fe}_2\text{O}_3 + \text{FeO} + \text{CaO} + \text{MgO} + \text{K}_2\text{O} + \text{Na}_2\text{O}} > 0.5$$

- forming fibers by pulling the further stabilized glass mass from spinnerets which receive glass from the feeder.

- sub C1
2. A method according to claim 1 wherein the preheating step heats the basalt to a temperature of 150 - 900 °C .

3. A method according to claim 1 wherein the temperature of the glass mass from which the fibers are pulled is  $t^{\text{melt}} + (50 - 250 \text{ } ^\circ\text{C})$ , where  $t^{\text{melt}}$  is the basalt melting temperature.

4. A method according to claim 3 wherein the preheating step heats the basalt to a temperature of 150 - 900 °C .
5. A method according to claim 1, wherein the glass mass is stabilized in the feeder at a temperature of 1250 - 1450 °C.
6. A method according to claim 5 wherein the preheating step heats the basalt to a temperature of 150 - 900 °C .
7. A method according to claim 6 wherein the temperature of the glass mass from which the fibers are pulled is  $t^{\text{melt}} + (50 - 250 \text{ }^{\circ}\text{C})$ , where  $t^{\text{melt}}$  is the basalt melting temperature.
8. Apparatus for producing basaltic fibers, comprising  
a basalt weigher;  
a melting furnace having a firing space and a stabilizing section;  
a heat exchanger connecting the basalt weigher to the firing space for preheating basalt which is charged into the melting furnace;  
a feeder which receives molten glass from the melting furnace, said feeder being connected by the stabilizing section to the firing space;  
spinnerets which receive molten glass from the feeder; and  
mechanisms which pull fibers from the spinnerets.

9. Apparatus according to claim 8 wherein the stabilizing section has a height which is 0.4 - 0.6 of the height of the height of the firing space.

10. Apparatus according to claim 9 wherein the heat exchanger is operable to preheat the basalt to a temperature of 150-900°C.

11. Apparatus according to claim 9 including means for heating the glass mass from which the fibers are pulled to a temperature of  $t^{\text{melt}} + (50 - 250^\circ\text{C})$ , where  $t^{\text{melt}}$  is the basalt melting temperature.

12. Apparatus according to claim 9 including means for maintaining glass mass at a stabilizing temperature which is 1250-1450°C.

13. Apparatus according to claim 8 wherein the heat exchanger is operable to preheat the basalt to a temperature of 150-900°C.

14. Apparatus according to claim 13 including means for heating the glass mass from which the fibers are pulled to a temperature of  $t^{\text{melt}} + (50 - 250^\circ\text{C})$ , where  $t^{\text{melt}}$  is the basalt melting temperature.

15. Apparatus according to claim 13 including means for maintaining glass mass at a stabilizing temperature which is 1250-1450°C.

16. Apparatus according to claim 8 including means for heating the glass mass from which the fibers are pulled to a temperature of  $t^{\text{melt}} + (50 - 250^\circ\text{C})$ , where  $t^{\text{melt}}$  is the basalt melting temperature.

17. Apparatus according to claim 8 including means for maintaining glass mass at a stabilizing temperature which is  $1250-1450^\circ\text{C}$ .

18. Apparatus according to claim 17 including means for heating the glass mass from which the fibers are pulled to a temperature of  $t^{\text{melt}} + (50 - 250^\circ\text{C})$ , where  $t^{\text{melt}}$  is the basalt melting temperature

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